

Please Enter

AMENDMENTS TO THE CLAIMS

The following listing of claims replaces all previous listings and versions of claims in this application.

1. (Currently Amended) A method of preparing a SiC surface of a semiconductor wafer to make it epi-ready which comprises:

annealing the wafer in an oxidizing atmosphere to condition the SiC surface;

treating the wafer surface to reduce surface roughness; and

polishing the treated and conditioned SiC surface of the wafer with an abrasive based on particles of colloidal silica in order to provide a wafer surface that is suitable for growing an epitaxial layer thereon;

wherein the wafer is annealed under conditions sufficient to produce a surface roughness that is on the order of about 2 nm rms and the polishing step is conducted to achieve a surface roughness that is on the order of about 3 Å rms.

2. (Canceled).

3. (Previously Presented) The method of claim 1 wherein the SiC surface layer is bonded to a semiconductor substrate.

4. (Original) The method of claim 1 wherein the annealing is conducted at a temperature of about 1000°C to about 1300°C.

5. (Previously Presented) A method of preparing a SiC surface of a semiconductor wafer to make it epi-ready which comprises:

annealing the wafer in an oxidizing atmosphere to condition the SiC surface; and

polishing the conditioned SiC surface of the wafer with an abrasive based on particles of colloidal silica in order to provide a wafer surface that is suitable for growing an epitaxial layer thereon,

wherein the annealing is conducted for about 1 hour to about 3 hours.

6. (Previously Presented) The method of claim 1 the wafer surface is treated by a deoxidizing step or by applying an RCA (SC1, SC2) type chemical cleaning step prior to polishing.

7. (Original) The method of claim 6 wherein the wafer surface is deoxidized with hydrofluoric acid.

8. (Previously Presented) The method of claim 1 wherein the treating step comprises chemically cleaning the wafer surface.

9. (Original) The method of claim 8 wherein the wafer surface is cleaned with hydrofluoric acid.

10. (Original) The method of claim 1 wherein the colloidal silica particles used for polishing the wafer surface include SYTON W30 type colloidal silica.

11. (Original) The method of claim 1 wherein the polishing is conducted with a polishing head that is rotated at about 10 rpm to about 100 rpm.

12. (Original) The method of the claim 11 which further comprises applying a pressure of about 0.1 bar to about 1 bar to the polishing head during rotation.

13. (Original) The method of claim 1 which further comprises polishing the wafer surface for about 15 minutes to about 30 minutes.

14. (Original) The method claim 1 wherein the polishing is conducted with an IC1000 type polishing pad.

15. (Previously Presented) A method of preparing a SiC surface of a semiconductor wafer to make it epitaxially which comprises:

annealing the wafer in an oxidizing atmosphere to condition the SiC surface;

polishing the conditioned SiC surface of the wafer with an abrasive based on particles of colloidal silica in order to provide a wafer surface that is suitable for growing an epitaxial layer thereon; and

etching the wafer surface with ions prior to polishing.

16. (Original) The method of claim 1 wherein the polishing is conducted to make the wafer surface suitable for homoepitaxy or heteroepitaxy.

17. (Previously Presented) The method of claim 1 wherein the polishing is conducted to provide a surface roughness of less than 15 angstroms RMS.

18. (Original) The method of claim 1 which further comprises depositing an epitaxial layer upon the polished wafer surface.

19. (Previously Presented) The method of claim 18 wherein the epitaxial layer comprises at least one of SiC, AlN, GaN, or AlGaIn.

20. (Currently Amended) The method of claim 1 wherein the wafer is annealed under conditions sufficient to produce a surface roughness that is on the order of about 2 nm rms; the conditioned surface is treated to prevent crystallization of abrasive during the polishing step, and the polishing step is conducted to achieve a surface roughness that is on the order of about 3 Å rms.